

AARTN ASSOCIATES

The Modern Construction Solutions

#1059, MIG-A Sector, Opp. Railwheel Factory,
Yelahanka New Town, Bangalore - 64

Ph : 8048505503 | Email : aartnassociates@gmail.com



Test Report of Coarse Aggregate

IS: 383-2016, IS: 2386 (Part-1, 3 & 4)-1963 (Reaffirmed-2012)

Date:

29-04-2021

Name of Work : Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06

Client Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.

Contractor Sri. K S Chowdareddy

Customer Reference EE(Project)YNK Zone/WO/191/2020-21

Source of Sample Sample supplied by Agency

Sample Condition Satisfactory

Sample Type Coarse Aggregate

Date of Test 29-04-2021

Sieve Analysis (Particle Size Distribution) of 20mm Down Coarse Aggregate

Total wt of the sample (gms):

5000

IS Sieve size (mm)	Weight retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specifcations as per IS: 383-2016
40	0	0	0.0	100	100
20	245	245	4.9	95.1	90-100
10	2560	2805	56.1	43.9	20-55
4.75	2033	4838	96.8	3.2	0-10
PAN	162	5000	100.0	0.0	-

Remarks :

Asst. Executive Engineer
Project Division
Yelahanka Zone
BBMP, Bangalore - 92



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IS: 383-2016, IS: 2386 (Part-1, 3)-1963 (Reaffirmed-2012)	Date: 29-04-2021

Name of Work : Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06

Client	Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.
Contractor	Sri. K S Chowdareddy
Customer Reference	EE(Project)YNK Zone/WO/191/2020-21
Source of Sample	Sample supplied by Agency
Sample Condition	Satisfactory
Sample Type	Coarse Aggregate
Date of Test	29-04-2021

Physical Properties

Sl. No	Physical Properties	Result	Requirements as per IS: 386-2016
1	Flakiness Index (%)	13.20	Combined Flakiness and Elongation Index shall not exceed 40% for uncrushed and crushed aggregate
2	Elongation Index (%)	12.6	
3	Specific Gravity	2.66	-
4	Bulk Density (Loose) (Kg/l)	1.54	-
5	Bulk Density (Composed) (Kg/l)	1.58	-
6	Water Absorption (%)	0.22	-
7	Aggregate Crushing Value (%)	24.50	Max 30% for Aggregates to be used in concrete for wearing surfaces, In case aggregate Crushing Value exceeds 30% then the test for 10% fines should be conducted for aggregate to be used in concrete other than for wearing surfaces
8	Aggregate Impact Value (%)	22.80	Max 30% for aggregate to be used in concrete for wearing surfaces, 45% for aggregate to be used in concrete other than for wearing surface.

Remarks :

[Signature]
Ac



[Signature]
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Project Division
Yelahanka Zone
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Test Report of Coarse Aggregate

IS: 383-2016, IS: 2386 (Part-1, 3 & 4)-1963 (Reaffirmed-2012)

Date:

29-04-2021

Name of Work : Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06

Client

Bruhat Bengaluru Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.

Contractor

Sri. K S Chowdareddy

Customer Reference

EE(Project)YNK Zone/WO/191/2020-21

Source of Sample

Sample supplied by Agency

Sample Condition

Satisfactory

Sample Type

Coarse Aggregate

Date of Test

29-04-2021

Sieve Analysis (Particle Size Distribution) of 40mm Down Coarse Aggregate

Total wt of the sample (gms):

15000

IS Sieve size (mm)	Weight retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specifcations as per IS: 383-2016
80	0	0	0	100	100
40	244	244	1.6	98.4	90-100
20	5432	5676	37.8	62.2	30-70
10	4332	10008	66.7	33.3	10-35
4.75	4654	14662	97.7	2.3	0-5
PAN	338	15000	100.0	0.0	-

Remarks :

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Handwritten signature
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Test Report of Fine Aggregate

IS: 383-2016, IS: 2386 (Part-1, 3)-1963 (Reaffirmed-2012)

Date:

29-04-2021

Name of Work : Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06

Client	Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.
Contractor	Sri. K S Chowdareddy
Customer Reference	EE(Project)YNK Zone/WO/191/2020-21
Source of Sample	Sample supplied by Agency
Sample Condition	Satisfactory
Sample Type	Coarse Aggregate
Date of Test	29-04-2021

Physical Properties

Sl. No	Physical Properties	Result	Requirements as per IS: 386-2016
1	Flakines Index (%)	12.40	Combined Flakiness and Elongation Index shall nor exceed 40% for uncrushed and crushed aggregate
2	Elongation Index (%)	11.8	
3	Specific Gravity	2.68	-
4	Bulk Density (Loose) (Kg/l)	1.48	-
5	Bulk Density (Composed) (Kg/l)	1.52	-
6	Water Absorption (%)	0.22	-

Remarks :

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Test Result of Grain Size Analysis

(IS : 2720 Part -4)

Date: 16-04-2021

Name Of Work: Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06

Client Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.

Contractor Sri. K S Chowdareddy

Customer Refe EE(Project)YNK Zone/WO/191/2020-21

Source of Sam Sample supplied by Agency

Sample Type Soil-Grain Size Analysis

Date of Test 16-04-2021

Weight before wash (gm) : 1000

Weight after wash (gm) :

IS Sieve Size (mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative (%) of Retained	Cumulative (%) of Passing (gm)	Remarks
75 mm	0	0	0	100	
20 mm	0	0	0	100	
4.75 mm	6.7	6.7	0.67	99.33	
2 mm	119.54	126.24	12.62	87.38	
425 m	204.5	330.74	33.07	66.93	
75 m	185.54	516.28	51.63	48.37	
Pan					
TOTAL					

OBSERVATION SHEET

DESCRIPTION	PARTICAL	SIEVE SIZE	PERCENTAGE	Total %
Gravel	Coarse	75 mm - 20 mm	0.00	0.67
	Fine	20 mm - 4.75 mm	0.67	
Sand	Coarse	4.75 mm - 2 mm	11.95	50.96
	Medium	2 mm - 0.425 mm	13.23	
	Fine	0.425 mm - 0.075 mm	28.25	
Silt & Clay		0.075 mm Passing	48.37	48.37

Remarks :

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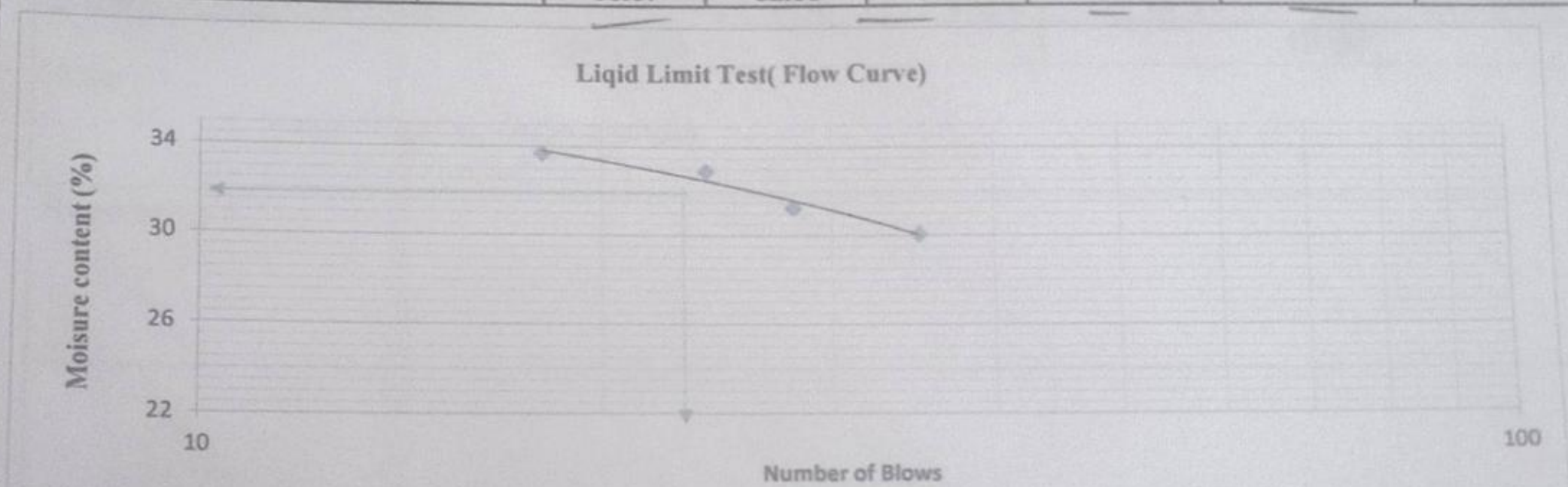
Test Result of Atterberg Limits

(IS : 2720, Part - 5)

Date: 16-04-2021

Name Of Work: Improvements to roads and drian at western side of hegdenagara
2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06

Client	Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.					
Contractor	Sri. K S Chowdareddy					
Customer Reference	EE(Project)YNK Zone/WO/191/2020-21					
Source of Sample	Sample supplied by Agency					
Sample Type	Soil-Atterberg Limits					
Date of Test	16-04-2021					
Determination No.	Liquid Limit				Plastic Limit	
	1	2	3	4	1	2
1 No Of Blows	18	24	28	35		
2 Container No.	S119	S120	S121	S122	S123 ✓	S124 ✓
3 Mass of Container (gm)	30.07	32.39	31.73	31.57	30.58 ✓	31.79 ✓
4 Mass of Wet Soil + Container (gm)	56.87	57.04	55.17	56.96	43.94 ✓	41.14 ✓
5 Mass of oven Dry Soil + Container (gm)	50.12	50.94	49.59	51.09	42.34 ✓	40.09 ✓
6 Mass of Water=(4-5)	6.75	6.10	5.58	5.87	1.60	1.05
7 Mass of oven dry soil =(5-3)	20.05	18.55	17.86	19.52	11.76	8.30
8 Water Content (w=6/7*100)	33.67	32.88	31.24	30.07	13.61	12.65



Liquid Limit : Moisture Content at 25 Blows

Liquid Limit	32.24	%	✓
Plastic Limit	13.13	%	✓
Plasticity Index	19.11	%	✓

Remarks :

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Test Result of Free Swell Index

(IS : 2720 , Part-40)

Date: 16-04-2021

Name Of Work: Improvements to roads and drian at western side of
hegdenagara 2nd main road from 1st cross to 7th cross and

Client Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka
Zone, Bengaluru.

Contractor Sri. K S Chowdareddy

Customer Reference EE(Project)YNK Zone/WO/191/2020-21

Source of Sample Sample supplied by Agency

Sample Type Soil-Free Swell Index

Date of Test 16-04-2021

S.No.	Description of Test	Readings	
1	Vol. of Soil Specimen in Distilled Water in cc (Vd)	11.8	12.1
2	Vol. of Soil Specimen in Kerosene in cc (Vk)	10	10
3	Free Swell Index in Percentage $((Vd - Vk) / Vk) \times$	18.00	21.00
AVG (%)		19.50	

Note :

1. Take 10gm of each sample.

Remarks :



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(IS : 2720 , Part-08)		Date: 03-05-2021		
Name Of Work: Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06				
Client	Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.			
Contractor	Sri. K S Chowdareddy			
Customer Reference	EE(Project)YNK Zone/WO/191/2020-21			
Source of Sample	Sample supplied by Agency			
Sample Type	Soil-Moisture - Density Relationship			
Date of Test	03-05-2021			
Region no :	WL Sample Taken : 5 Kg			
Determination No	1	2	3	4
Percentage of Water taken(%)	6	8	10	12
Mould No.	3	3	3	3
Volume of mould (V) CC	2250.63	2250.63	2250.63	2250.63
Mass of mould (M1) gm	5740	5740	5740	5740
Mass of mould+Compacted soil (M2) gm	9684	9904	10184	10098
Mass of Compacted soil(M3=M2-M1) gm	3944	4164	4444	4358
Wet Density of soil (γ_w)=M3/V gm/cc	1.752	1.850	1.975	1.936
Container No.	S125	S126	S127	S128
Mass of Container (gm)	32.72	30.89	32.23	30.30
Mass of Wet Soil+Container (gm)	105.23	109.55	111.24	120.21
Mass of Oven Dry Soil + Container (gm)	100.87	103.71	103.71	110.6
Mass of Water (gm)	4.36	5.84	7.53	9.61
Weight of dry soil (gm)	68.15	72.82	71.48	80.30
Water Content (%)	6.40	8.02	10.53	11.97
Dry Density of Soil (γ_d)= $\gamma_w/(1+w\%)$ gm/cc	1.647	1.713	1.786	1.729

Dry Density (gm/cc)

Moisture Content (%)

Remarks :

From Graph	
Maximum Dry Density (MDD)	1.785 gm/cc
Optimum Moisture Content (OMC)	10.40 %



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IS:2720 (Part-28)		Date: 15-06-2021	
Name Of Work: Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06			
Client		Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.	
Contractor		Sri. K S Chowdareddy	
Customer Reference		EE(Project)YNK Zone/WO/191/2020-21	
Source of Sample		Sample supplied by Agency	
Sample Type		Soil Field Density Test (FDD)	
Date of Test		15-06-2021	
MDD (gm/cc)		1.785	
OMC (%)		10.4	
Field Density			
Weight of soil from hole (Ww)	gm	Test 1	Test 2
Weight of Sand + Cylinder (W1)	gm	Test 3	Test 4
Weight of Sand + Cylinder after pouring (W2)	gm	Test 5	Test 6
Weight of Sand in Cone (W3)	gm		
Weight of Sand in hole (W1-W2-W3) (W _b)	gm		
Unit Weight of Sand (Gs)	gm/cc		
Volume of the hole (v)=W _b /Gs	cc		
Bulk Density of Soil γ = Ww / v	gm/cc		
Moisture content by RMM	%		
Dry density of soil γ _d = {g / (1 + w / 100)}	gm/cc		
Relative Compaction	%		
% of Compaction required	%		
Remarks:		0.918	

Asst. Executive Engineer
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Test Result of Field Density Test

IS:2720 (Part-28)		Date: 18-06-2021					
Name Of Work: Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06							
Client		Bruhat Bangalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.					
Contractor		Sri. K S Chowdareddy					
Customer Reference		EE(Project)YNK Zone/WO/191/2020-21					
Source of Sample		Sample supplied by Agency					
Sample Type		Soil Field Density Test (FDD)					
Date of Test		18-06-2021					
MDD (gm/cc)		1.785					
OMC (%)		10.4					
Field Density		Test 1	Test 2	Test 3	Test 4	Test 5	Test 6
Weight of soil from hole (Ww)	gm	11156	11281	11836	11641	11726	11576
Weight of Sand + Cylinder (W1)	gm	30000	30000	30000	30000	30000	30000
Weight of Sand + Cylinder after pouring (W2)	gm	19452	19367	19062	19102	19127	19237
Weight of Sand in Cone (W3)	gm	2257	2257	2257	2257	2257	2257
Weight of Sand in note (W1, W2, W3)	gm	8291	8376	8681	8641	8616	8506
Unit Weight of Sand (Gs)	gm/cc	1.321	1.321	1.321	1.321	1.321	1.321
Volume of the hole (v)=Wb/Gs	cc	6276.31	6340.65	6571.64	6541.26	6522.33	6439.06
Bulk Density of Soil 'Y = Ww / v	gm/cc	1.78	1.78	1.80	1.78	1.80	1.80
Moisture content by RMM	%	10.2	9.8	10.6	10.2	10.5	10.8
Dry density of soil 'Ya = {g / (1 + w / 100)}	gm/cc	1.61	1.62	1.63	1.61	1.63	1.62
Relative Compaction	%	0.9036	0.9078	0.9123	0.9047	0.9115	0.9090
% of Compaction required	%	0.908					
Remarks:							

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Test Result of Field Density Test		Date: 05-08-2021					
IS:2720 (Part-28)		Name Of Work: Improvements to roads and drian at western side of hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in ward No.06					
Client	Bruhat Bengalore Mahanagara Palike (BBMP) , Yelahanka Zone, Bengaluru.						
Contractor	Sri. K S Chowdareddy						
Customer Reference	EE(Project)YNK Zone/WO/191/2020-21						
Source of Sample	Sample supplied by Agency						
Sample Type	Soil Field Density Test (FDD)						
Date of Test	05-08-2021						
MDD (gm/cc)	1.785						
OMC (%)	10.4						
Field Density		Test 1	Test 2	Test 3	Test 4	Test 5	Test 6
Weight of soil from hole (Ww)	gm	11211	11336	11891	11696	11781	11631
Weight of Sand + Cylinder (W1)	gm	30000	30000	30000	30000	30000	30000
Weight of Sand + Cylinder after pouring	gm	19521	19436	19131	19171	19196	19306
Weight of Sand in Cone (W3)	gm	2257	2257	2257	2257	2257	2257
Weight of Sand in hole (W _b)	gm	8222	8307	8612	8572	8547	8437
Unit Weight of Sand (Gs)	gm/cc	1.321	1.321	1.321	1.321	1.321	1.321
Volume of the hole (v)=W _b /Gs	cc	6224.07	6288.42	6519.30	6489.02	6470.10	6386.83
Bulk Density of Soil $\gamma = Ww / v$	gm/cc	1.80	1.80	1.82	1.80	1.82	1.82
Moisture content by RMM	%	10.5	9.66	10.4	10	10.73	10.7
Dry density of soil $\gamma_d = \gamma / (1 + w / 100)$	gm/cc	1.63	1.64	1.65	1.64	1.64	1.65
Relative Compaction	%	0.9132	0.9209	0.9256	0.9180	0.9212	0.9216
% of Compaction required	%	0.920					
Remarks:							

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EE (Project) Ynk Zone/WO/191/2019-20

Date: 20-04-2020

L TEST REPORT ON REINFORCEMENT STEEL:

Sub: Testing of Reinforcement Steel of diameter 10 & 8 mm (Culvert 10&16mm) TMT

Steel.

(Project*: Improvements to roads and drains at western side of Hegdenagara 2nd main road from 1st cross to 7th cross and surrounding Areas in Ward No.06

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. K S Chowdareddy, #32, 2nd Main 3rd Cross,
Maruthinagar Yelahanka-64

TABLE - 1

SL No	Details	For 10 mm		For 12 mm	
		Test Results	Min Req. as per IS 1786-2008	Test Results	Min Req. as per IS 1786-2008
01	Observed diameter of bar	10.0 mm	8.0 mm	12.0 mm	10.0 mm
02	Observed Wt/m Length Kg/m	0.617	0.363	0.89	0.567
03	Proof stress/Yield stress, fy, N/mm ²	379.2	500.0	556.0	500.0
04	Bend/ Re bend Test	Ok	---	Ok	---
05	Percentage of Elongation, %	19.50	16.00	20.80	16.00
06	Ultimate Tensile Strength N/mm ²	457.0	565.0	689.0	565.0

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